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ABSTRACT

A report on Earthquake Preparedness presents California school districts with direction for complying with existing earthquake preparedness planning laws. It first contains two sets of recommendations. The first set requires state action and is presented to the Legislature for consideration. The second set consists of policy statements and requires action by local school authorities. The document then details a model earthquake emergency procedure system, examines public schools as community shelter sites, describes an earthquake damage assessment procedure, and presents a list of equipment and supplies that schools should consider having on hand to provide minimum support during an extended crisis. Appendices contain hazard identification checklists; specific opinions, minority views or specific proposals from the Earthquake Task Force that supplement or contrast with this report; and earthquake-related California State legislative material. (GR)

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Report of the Earthquake Preparedness Task Force

in compliance with

Assembly Bill 3730
Chapter 1352, Statutes of 1988

authored by
Assemblymember Roybal-Allard

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CALIFORNIA DEPARTMENT OF EDUCATION
Bill Honig, Superintendent of Public Instruction
Sacramento 1989

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Revised August 16, 1989

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The Division would like to acknowledge QuakeSafe and its gracious hosting of our Southern California meeting in their facilities.

Since the task force was not funded, we would like to thank the organizations, districts and firms represented by the task force members; without their cooperation this report could never have been accomplished. Special thanks go to our private citizen members who, out of their personal commitment to the safety of our school children, paid their own expenses.

Finally, special thanks to Helen Ostapeck, Associate Analyst for her valuable and consistent support on this project.

Respectfully,
Michael D. Chambers AIA, Chairman
Senior Architect, School Facilities Planning Division

Methodology

AB 3730, introduced by Assemblymember Roybal-Allard, was sponsored by the Los Angeles Unified School District in hopes of bringing schools into compliance with earthquake preparedness requirements under existing law and of identifying issues critical to disaster preparedness planning. In response to the mandate of AB 3730, Chapter 1352, Statutes of 1988, the Department of Education's School Facilities Planning Division was required to report to the state legislature with recommendations for compliance with the methods of earthquake preparedness mandated by AB 2786 (introduced by Assemblymember Katz), Chapter 1659 of the Statutes of 1984.

SDE established a task force to study and report on earthquake preparedness in schools and to compile the following information:

Create a system to address school disaster plans per the Katz bill.

Determine the role of public school sites as community shelters.

Identify a procedure for earthquake damage assessment prior to school use as a shelter.

Identify necessary equipment and supplies.

In assembling this task force SDE invited a multi-disciplinary group of experts including representatives from the San Francisco, Los Angeles, San Bernardino, Palmdale and Fresno school districts, the PTA, Red Cross, Office of State Architect, Office of Emergency Services, Structural Engineers Association of California, Seismic Safety Commission, QuakeSafe, State Police, Bay Area and Southern California Earthquake Preparedness Projects, private consultants specializing in emergency planning, and concerned private citizens.

The task force met twice in Sacramento and once in Los Angeles. During these day-long meetings members divided into working committees to discuss and outline the report. Throughout the sessions the emphasis was on how to protect youngsters attending California schools. Some of the areas discussed included: how to prepare buildings to mitigate damage from an earthquake, how to determine if a building is safe after a disaster happens, and recommendations to consider when creating a disaster plan with a major focus on policy and funding issues. We also determined what supplies are critical to meet health and safety standards.

After much discussion and debate we finalized the outline and various members of the task force wrote the narrative for the report. Some members of the task force submitted monographs amplifying issues contained in the report and that addressed personal opinions and issues relative to disaster preparedness in California schools.

From the outset the task force decided to produce a document that could go beyond a report to the legislature and be utilized by school boards and administration. This report contains issues and detailed data of importance to every school district in California. It provides direction for local policy and planning and a strategy for statewide effort on disaster preparedness planning and response. We therefore hope to disseminate portions of the report to school districts as a reference in developing disaster preparedness plans.

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Executive Summary

Earthquake preparedness planning and education for schools is an important component of our State's five-year plan to Reducing Earthquake Hazards 1987-92. Although some progress has been made in preparing California schools, preparedness planning is primarily accomplished on an individual basis, depending for the most part on the commitment of individual school boards and district site administrators, teachers and the community. Standardization will be required to ensure the safety of our children in all California schools.

Legislation has been the primary force behind school earthquake preparedness. The Katz Bill (AB 2786/Chapter 1659, 1984) requires the governing boards of each private and public school district and each county superintendent of schools to establish an earthquake emergency procedure system, and to include protective measures to be taken before, during and after an earthquake.

The State Department of Education's School Facility Planning Division established an advisory task force to identify, deliberate and develop recommendations pertaining to school compliance with existing earthquake preparedness planning laws.

This report contains two sets of recommendations. The first set of recommendations requires state action and is therefore presented to the Legislature for consideration. The second set consists of policy statements and requires action by local school authorities. These are therefore directed to governing boards of all California public school districts for their adoption.

A. Recommendations For The Legislature

While many of the recommendations made by the AB 3730 task force are geared specifically to school districts, there are several issues that transcend site and district policy. These issues require consideration at the state level, whether by the legislature or by the State agencies actively involved in earthquake preparedness. This section briefly reviews those issues, and makes several specific recommendations.

RECOMMENDATION 1: DESIGNATE ONE STATE AGENCY AS LEAD FOR SCHOOL EARTHQUAKE EMERGENCY PREPAREDNESS. DETERMINE THE LEVEL OF COMPLIANCE OF SCHOOL DISTRICTS WITH EXISTING STATE LAW.

Background:

The Education Code requires earthquake preparedness planning. Sections 35295 through 35297 impose a state-mandated local program by requiring the governing boards of private schools, school districts and the county superintendents of schools to develop an earthquake emergency procedure system that would include a school building disaster plan. These entities interpret the intent of the code requirements and develop their policies, procedures, and compliance evaluation accordingly. The code states that the governing boards and county superintendents may work with the Office of Emergency Services and Seismic Safety Commission. The Code does not provide for any authority or responsibility at the State Department of Education level.

The Education Code (Sec. 40040 - 40048) also requires school districts to cooperate with the American Red Cross to provide shelters during disasters. This recent code section also has not received wide distribution, and the experience of the Office of Emergency Services indicates that during training exercises the coordination between these two groups is frequently lacking.

Historical legal authority also exists for school emergency planning: Title 5 of the California Administrative Code (referencing Education Code section 33031) requires civil defense and disaster preparedness plans. This section has been in effect since the 1950's. Plans developed under this authority address the earthquake hazard in a general way.

Status:

Currently, no state agency has the lead responsibility for assuring school emergency preparedness. The Office of Emergency Services indicates the State Department of Education should have the lead; conversely, the State Department of Education indicates the lead should be the Office of Emergency Services. The consensus among the task force members was that SDE should take the lead. SDE is willing to take the lead if appropriate funding is appropriated.

There is no consensus on a standard by which to evaluate school site or district emergency plans, nor any approval authority.

School districts currently cannot measure or evaluate their performance against any set standard. There is a wide range of approaches to earthquake preparedness among different districts in the State and no enforcement mechanism for requiring schools or districts to develop these plans. Consequently, there is no evidence that school boards are adopting policies to implement the mandates of the existing legislation.

The lead agency's role would include the following functions.

* Provide overall program and policy guidance
* Provide enforcement and compliance actions
* Establish a timeline for compliance
* Give schools guidance in setting priorities and developing their program
* Establish minimum disaster plan standards
* Facilitate statewide, county, district and local district coordination
* Coordinate private school compliance with education code requirements
* Collect, evaluate and distribute pertinent resource information and materials
* Develop overall program strategy and long-range operations recovery
* Serve as liaison between Department of Education and Office of Emergency Services
* Advise on legislation

It is unknown how many schools and districts are in compliance with legal requirements for earthquake emergency plans. Although the Governor, in his veto message of SB 2704, indicated that the State Department of Education is undertaking a study of compliance with existing state law, such a study is neither under way, nor planned. In order to determine compliance with the code by means other than entities' self-evaluation, it would be necessary to establish an acceptable criteria or standard as to the intent of the code.

RECOMMENDATION 2: APPROPRIATE FUNDING TO SCHOOL DISTRICTS TO COMPLY WITH THE SPECIFIC REQUIREMENTS AND THE INTENT OF THE KATZ BILL.

Background:

The Katz bill which passed in 1984 mandated that school districts undertake several activities. These activities were only loosely defined in the legislation and it was left up to individual school districts to decide how to interpret the intent of the legislation.

Some school districts are very serious in their attempts to develop earthquake emergency programs, embarking on comprehensive, long-term and costly programs. These costs have been borne primarily by districts, since the legislation provided no funding. While the Commission on State Mandates decided in 1989 that staff time costs could be reimbursed as part of the mandate, districts are still expected to absorb all costs for supplies, structural and non-structural surveys and remedies, and exercises.

Status:

If schools are to make a serious commitment to comprehensive earthquake preparedness, they need significant financial resources to help them do an adequate job.

RECOMMENDATION 3: CONSOLIDATE THE DISTRIBUTION OF EXISTING RESOURCE INFORMATION REGARDING EARTHQUAKE EMERGENCY PREPARATIONS FOR SCHOOLS.

Background:

There is no uniform system for disseminating resource information. For example, Guidelines for Development of a School Earthquake Safety Plan were published by the Federal Emergency Management Agency, and distributed by the Seismic Safety Commission in 1986. The guidelines went to every school district, and to each public and private school with over 50 students in California. Along with the Guidelines was a cover letter referring the school to State Office of Emergency Services technical assistance resources, and a copy of AB 2786 (Katz, 1984).

The Office of Emergency Services, through their Southern California and Bay Area Earthquake Preparedness Projects, disseminates resources and offers limited technical assistance to schools and districts in the development of earthquake preparedness plans within their planning regions.

Status:

A system should be established to consolidate and coordinate the dissemination of earthquake resources to schools in an equitable manner.

RECOMMENDATION 4: DEVELOP AND EXPAND STATE SPONSORED TRAINING AND EXERCISES AVAILABLE TO SCHOOLS AND SCHOOL DISTRICTS

Background:

At the state level, the Office of Emergency Services, through the California Specialized Training Institute (CSTI), is the only entity that offers training seminars and customized training exercises to test school district emergency planning efforts. A statewide training needs assessment, conducted by CSTI, showed that schools were among the agencies most in need of emergency management training. Private individuals and companies also assist schools in preparedness efforts.

Status:

Training and exercises for school districts may not be adequate.

The Office of Emergency Services has developed a program offered by the CSTI. However these courses focus primarily on management considerations, and only three districts out of 1,025, in the state, have participated. Faculty limitations and commitments constrain the number of offerings of this program and the requirement to collect reimbursements ($3000 - $5000 per session) can place a financial hardship on districts which would like to participate. CSTI has not conducted any programs in the last year, and has none scheduled for the next academic year.

CSTI has recommended a series of regional training seminars for school district personnel to introduce them to the model emergency preparedness system and to assist them in developing their emergency plans. These seminars could then be followed by regional training exercises, to assist in the vital step of testing the plans through implementation.

Red Cross disaster response training courses focus on shelter management, first aid, and home preparedness. Some districts participate in these courses as part of their in-service training programs, or the courses are offered on a voluntary basis.

RECOMMENDATION: 5 AMEND THE CALIFORNIA FIELD ACT TO REQUIRE IT TO COVER NONSTRUCTURAL HAZARDS IN PUBLIC SCHOOLS

Background:

The Office of State Architect administers the Field Act (Education Code Section 39140 et seq). The Field Act applies to public school buildings and provides a high level of earthquake safety standards. The Act does not specifically address nonstructural hazards, such as glass windows, furnishings, unsecured bookcases, etc. However, the Private School Building Safety Act of 1986 specifically mentions that nonstructural components will be given consideration to assure that they will not detract from occupant safety in the event of an earthquake.

According to federal law (PL93-288, Section 406) following a Presidential Disaster Declaration, a state hazard mitigation plan will be developed to describe state and local actions that have been or will be taken to mitigate the hazard. Section 406 was recently extended to include earthquake disasters. The Whittier Earthquake Hazard Mitigation Report identifies nonstructural hazards as a high risk. The report recommends that nonstructural elements be added to the Field Act.

Status:

A lead agency could advocate for Field Act modifications to make sure that school earthquake safety plans consider nonstructural hazards.

RECOMMENDATION 6: PROVIDE FOR THE USE OF LOCAL ENGINEERS WHO ARE REGISTERED WITH THE GOVERNOR'S OFFICE OF EMERGENCY SERVICES' VOLUNTEER ENGINEER PROGRAM TO INSPECT LOCAL PUBLIC SCHOOLS

Background:

The Governor's Office of Emergency Services (OES) established a volunteer engineer program. The program utilizes structural engineers from other parts of the state to assist with building inspections after a major earthquake. These engineers are to assist building departments in performing rapid damage assessments; they are assigned to jurisdictions by OES. The Office of State Architect (OSA) has jurisdiction over all public schools in California and would be expected to inspect schools for damage and for possible use as a community shelter.

Status:

In a major earthquake OSA might not have adequate resources to inspect possible shelter sites in an affected area, as well as to inspect all possibly damaged school buildings. Because of the urgency in quickly setting up shelters, as well as returning students to classrooms, it would be useful to have a locally designated structural engineer report to the school to perform the inspection. This engineer would need to be previously registered as a participant in the volunteer engineer program.

B. Recommendations For Governing Boards of Public School Districts

The recommendations presented in this section correspond to the three main

components of the Katz Bill which also served as discussion topics for task force members. The AB 3730 task force submits them for policy consideration and adoption by all governing boards of California school districts.

Model Earthquake Emergency Procedure System (See Part I)

RECOMMENDATION 1: Establish a director of Emergency Services, responsible for the planning development, coordination and implementation of a system of emergency preparedness.

RECOMMENDATION 2: A district emergency plan that includes:

* a school building disaster plan
* drop procedure
* protective measures
* guidelines and procedures for interfacing of all schools, offices and sites within districts
* a system of communications
* training

Public Schools as Community Shelters Site (See Part II)

RECOMMENDATION 3: Develop policy statements and procedures which delineates the following:

* an emergency operations organization
* authorities for emergency operations function
* emergency personnel policy
* policy regarding needs of the schools
* liaison with local governments and outside agencies for mutual aid
* policy and criteria regarding school closure and return to normal operations in times of major emergencies
* policy for the relocation of schools, offices, sites
* policy regarding the use of convergent volunteers and supplies
* policy for protection of vital records

Earthquake Damage Assessment Procedure (See Part III)

RECOMMENDATION 4: Authorize a structural evaluation of all those buildings that could potentially be used as a community shelter.

RECOMMENDATION 5: Conduct a non-structural hazards inventory of all district buildings and remedy immediately those hazards that represent the greatest threat to life safety.

RECOMMENDATION 6: Develop written contingency plans for how structural damage assessments will be conducted after a damaging earthquake. Public school districts need to keep in mind that local building departments do not have jurisdiction over public school buildings, therefore special arrangements need to be made.

I.Model Earthquake Emergency Procedure System

RATIONALE

In determining what approach to take in complying with this portion of AB 3730, the task force was extremely concerned that the development of a model procedure would end up being another fill-in-the-blank, over simplified attempt at encouraging school districts to develop some token disaster plan. A significant amount of discussion and argument went into the approach presented herein. Task force members were emphatic in their notion to clearly identify and delineate the policy, operation and funding issues that are critical to the development of any form of workable disaster preparedness plan. The issues and ideas presented reflect a deep seated concern that school boards, administrators and the Legislature clearly understand that successful disaster preparedness is much more than a forgotten plan on a dusty shelf.

APPROACH

The approach to development of a model earthquake emergency procedure took the form of defining what were the current State responsibilities and to what extent progress has been made. The issue of district board commitment to disaster preparedness was considered critical. The remainder of the discussion centered more on procedural issues and training. However, the sense of state support and district commitment is key throughout.

RECOMMENDATIONS

It is recommended that governing boards in California school districts develop policy to establish:

A Director of Emergency Services, responsible for the planning, development, coordination and implementation of a system of emergency preparedness. (See Part A.)

A district emergency plan that includes (see Part B.):

* A school building disaster plan
* Drop procedure
* A system of communications
* Protective measures
* Guidelines and procedures for interfacing of all schools, offices and sites within the district

Training and Exercises (See Part C.)

A.District Board Commitment

The Board of Education of each school district in California must adopt, as district policy, the implementation of an emergency operations organization whose responsibility will be to ensure a high level of district disaster preparedness. This organization shall include, but not be limited to, the following:

1. Director (coordinator, etc.) of Emergency Services who shall be responsible for the planning, development, coordination and implementation of a system of emergency preparedness for the district. The Director shall be provided the authority to accomplish the tasks assigned to him or her under the board or superintendent's direction.

2. A district emergency plan to include:

   a. A school building disaster plan for all buildings within the district, which can be immediately implemented, the purpose being to ensure the safety and care of students and staff.

   b. Drop Procedure. As used in this paper, "drop procedure" means an activity whereby each student and staff member takes cover under a table or desk, dropping to his or her knees, with the head protected by the arms, and the back to the windows. A drop procedure practice and evacuation shall be held at least once each school quarter in elementary schools and at least once a semester in secondary schools, and once a year in all other district buildings.

   c. Protective measures to be taken before, during, and following an earthquake. Training would include non-structural hazard mitigation, drop and cover, and evacuation.

   d. A program to ensure that the students and staff are aware of, and properly trained in, the earthquake emergency procedure system. Training would include a, b and c above and training for staff in emergency situations such as first aid, CPR, triage, damage assessment, and search and rescue.

e. Guidelines and procedures submitted to all schools, offices and sites within the district in order to promote consistency in application. In that way someone would be able to understand and implement the emergency response plan at any given site if necessary.

f. A system of communications must be developed to identify damage assessment including the dead and injured, structural damage and site needs. It must be designed around other than normal telephone communications; this could be radio communications, four-wheel drive vehicles, runners, bicycles or motorcycles, or an easily understood flag system.

3. Identify and prioritize the district's essential requirements for restoring normal operations as soon as possible after a major emergency.

B.Disaster Plan Components

Each district facility whether it is a maintenance yard or district headquarters should have developed plans that tie into the procedure system. However, the elements listed are principally directed to the school building disaster plan.

EARTHQUAKE EMERGENCY PROCEDURE SYSTEM COMPONENTS

1. District policy determinations:

   a. Budget allocation
   b. Designation of authorities
   c. Foreign language service
   d. Training and curriculum for students, teachers and staff
   e. Recordkeeping
   f. Hold and release for students, teachers and staff
   g. Agency support, communication, and coordination, i.e. city, fire, police, county, Red Cross, etc.
   h. Use of students and volunteers

2. Evaluation and analysis; pre-plan development:

   a. Sources of information, assistance in planning
   b. Planning scenario

c. Area maps, site plans, utilities plan and pertinent structures and site feature drawings
d. On-site and off-site hazards, natural and manmade
e. Structural and nonstructural hazards
f. Evacuation routes
g. Assembly areas
h. Relocation sites
i. Existing on-site and off-site resources such as personnel, facilities, supplies and equipment
j. Resource short falls to include medical, food, water, sanitation and shelter for extended operations
k. Hazardous material on site
l. Mass care and community shelter usage

3. Emergency response and operations planning

a. Concept of operations to include appropriate policies, designated responsibilities and organizational structure
b. Alert and immediate self protection
c. Evacuation and assembly with back-up systems
d. Medical: first aid, triage and trauma
e. Emergency hazard mitigation: fires, utilities shutoff and hazardous materials
f. Search and rescue
g. Damage assessment, structural evaluation and reports
h. Communications: assistance requests, on site operations and reporting
i. Accountability and control of students and staff
j. Student and staff release
k. Protection of critical records
l. Shelter operations including joint student and community shelter occupancy
m. Water, food, shelter and sanitation
n. Supplies and equipment
o. Site security and control
p. Public information
q. Recovery
r. Site and plot plans indicating evacuation routes and assembly areas
s. Plot plans for first aid supplies and stations, fire fighting equipment, rescue equipment, emergency operations center and emergency vehicle access locations.
t. Site plan showing utilities, hazardous areas, inspection routes and details for emergency shut off

u. Site plan indicating structures and facilities usage for emergency occupant care and/or mass care operations for items such as feeding, shelter and emergency sanitation measures.

4. System maintenance

a. Training program
b. Drills and exercises
c. Resources inventory review and deficiency corrections
d. Identification of new potential hazards
e. Review and up-date procedure for plans to include policy, procedures, personnel rosters and assignments
f. Review and up-date or develop additional agency support agreements and letters of understanding
g. Nonstructural hazard mitigation program
h. Mechanism for overall program review and approval

C.Training And Exercises

EMPLOYEE TRAINING AND EDUCATION IS ESSENTIAL TO PROPER EMERGENCY RESPONSE

School employees should know what to do before, during and after an earthquake. The strategies and skills learned will help ensure the safety and survival of students and staff. Agencies conducting the training should be approved by the school district. They could include: governmental agencies, such as Office of Emergency Services, California Specialized Training Institute, and fire departments, as well as nonprofit agencies such as the Red Cross and QuakeSafe.

Informed students, teachers, and staff will respond more rationally to earthquakes if they are given the opportunity to review and practice earthquake education curriculum materials currently available from public and private agencies. Education efforts are sporadically conducted around the state due to lack of funds for implementing the programs.

The following issues should be addressed in specialized training for district and school site coordinators.

EARTHQUAKE AWARENESS SHOULD BE ENHANCED

Few coordinators even have an elementary understanding of the geological processes responsible for earthquakes, much less aftershocks. Coordinators should understand the general nature of the threat and know what to expect in order to adequately prepare

for and respond to an earthquake.

FIRST AID: TRAINING AND SUPPLIES ARE CRITICALLY NEEDED

School officials assign first aid responsibilities indiscriminately, often to educators who lack proper certification. First aid supplies for large scale emergencies do not generally exist in schools. To ensure the care and safety of students and staff immediately after a major quake, first aid (both medical and psychological) should be provided. However most school districts have not given budget priority to the purchase of appropriate supplies.

EARTHQUAKE DRILLS AND EVACUATION PROCEDURES NEED UPDATING

Many secondary school districts have ceased "duck-cover-hold" drills and evacuation practice is sporadic. Rarely is it coordinated with local emergency response agencies. Few districts have updated their earthquake response procedures. Strict legislative guidelines for the regular practice of the "duck-cover-hold" drills immediately followed by building evacuation drills is imperative because of the possibility of secondary hazards, such as fires and explosions.

BASIC SHELTER MANAGEMENT PRACTICES WILL ENABLE SCHOOLS TO BE SELF RELIANT FOR 72 HOURS

Officials should practice estimating the short-term and long-term requirements for care and shelter of students and staff. Because expert judgment is required to determine whether buildings are safe for reentry, outdoor shelters may be needed to provide food and water preparation and dispersal, protection from unfavorable weather conditions, first aid, communication with local agencies, sanitation supplies and equipment, bedding, and a temporary morgue. There is currently no funding available to provide the above supplies and equipment or for training in basic shelter management practices.

SITE CONTROL AND SECURITY STRATEGIES REQUIRES PLANNING

Planning of designated security areas for specific functions such as a morgue, first aid station, disaster supplies storage and student security will greatly reduce confusion, especially in regard to recordkeeping, tracking of students released to parents and coordinating teams involved in search and rescue. Security procedures for eliminating unauthorized reentry into school structures will keep the risk of additional injuries and looting to a minimum. Courses offered to school officials concerning the above strategies are rare and access is limited.

COMMUNICATION IS A VITAL LINK IN EMERGENCY RESPONSE

Without communication, schools will be dangerously isolated and chaotic. Hardware

skills with mobile radios, and pocket pagers should be practiced by key staff both for on-site use and for monitoring community-wide broadcasts. A chain of command will ensure the smooth operation of a pre-formed communication network with local support groups and emergency services agencies.

Communication is the key to organization, yet schools do not have the hardware or trained personnel to fulfill this critical component of emergency response.

QUICK RESPONSE TO GAS LEAKS AND FIRES SAVES LIVES AND PROPERTY

Specific equipment is needed to shut off gas mains and to fight fires. Training in the proper use of the equipment is essential and will greatly reduce the potential for secondary explosions and further loss of life and property. Responsibility for these crucial needs at school sites is generally assigned to the meager janitorial staff, but should include teachers and classroom aides who are strategically spaced around the campus and can quickly respond to small fires and leaking gas lines.

DISTRICTS SHOULD DOCUMENT THEIR COMPLIANCE WITH THE KATZ BILL TO REDUCE INSURANCE RISKS AND TRACK EXPENDITURES

To prepare for litigation concerning liability for losses resulting from an earthquake, districts should prepare detailed documentation of training efforts, emergency response equipment and supply requisition, structural and nonstructural hazard reduction efforts, etc... The documentation should be carefully maintained and periodically updated. There are no standards or policies for compliance with the Katz bill nor guidelines for districts to document their compliance efforts.

ACTION NEED

Each of the emergency response strategies and skills described above should be addressed and appropriately funded to help ensure the safety and survival of students and district staff.

II.Public Schools as Community Shelter Sites

RATIONALE

The need for school districts to be good neighbors in times of disaster and the need for protecting students and staff under bizarre and strenuous conditions dictated that this portion of the report have the widest possible input from disaster planners, school officials and support groups like the Red Cross.

APPROACH

The task force was privileged to have a broad base of experienced and knowledgeable members who clearly understood or came to understand the various roles that each party to a community shelter operation must play. This type of interaction among the group helped identify the issues and developed ideas that should be useful for members of the community shelter team.

RECOMMENDATIONS

It is recommended that governing boards in all California school districts develop policy to establish the following:

1. An emergency operation organization
2. Authorities for emergency operations functions
3. Emergency personnel policy
4. Policy regarding needs of the schools
5. Liaison with local governments and outside agencies for mutual aid
6. Policy and criteria regarding school closure and return to normal operations in times of major emergencies
7. Policy for the relocation of schools, offices, sites
8. Policy regarding the use of convergent volunteers and supplies
9. Policy for protection of vital records

Community Shelter Operations

Under the Civic Center Act (Education Code 40040 - 40048) California schools are potential shelter sites. Secondary schools are preferable as shelters to elementary schools because of the smaller furniture, bathroom facilities, etc. in elementary schools.

There are two primary facets of operations relative to the use of a school site as a mass care facility.

Each school shall:

* Provide a safe and supportive care environment for the school population of students and staff, if a disaster occurs while school is in session.

* Serve as a possible site for a community mass care shelter, whether or not it is predesignated as such. Local authorities may need to designate certain facilities during a disaster.

Basic operational needs are:

* Food and water - to provide feeding capability for an extended period of time. This may be done by in-house preparation or catering. It may involve school personnel or an outside agency such as American Red Cross.

* Sanitation/cleanliness for both students and community.

* Adequate space for rest and sleeping.

* Security

* Debriefing/crisis counseling

* Some level of emergency medical care. This requires prior commitment of human resources, training, medical supplies and coordination with local emergency medical services agencies.

The school administrator will be better prepared if the following issues are considered prior to a disaster.

* How to determine and maintain a safe and secure environment.

* How to determine capacity/capability of the school as a potential shelter for students and staff only or as a community shelter.

* How to train staff for emergencies; where to go for assistance.

* How to interface with public and other "official" relief agencies is critical.

* How to identify resources/assistance from other response agencies in the community both in preparedness planning and in an actual disaster.

* How to prioritize limited resources before a disaster occurs.

* Process for recovery.

In order to implement the Katz bill (Education Code 35295 - 35297), school boards need to consider and develop policy in several areas. It is recommended that governing boards in all California school districts develop policy as follows:

ESTABLISH AN EMERGENCY OPERATIONS ORGANIZATION

The Katz mandate calls for the establishment of Earthquake Procedures by governing boards in California school districts. Absent an organizational structure, implementation of such "procedures" and proper emergency planning is impossible. An Emergency Operations Organization which establishes authority and responsibility for emergency functions will provide for the direction, coordination and advancement of school emergency programs. Such an organization would be responsible for developing of emergency plans and procedures, implementing of training programs, emergency response and mitigation programs and providing adequate emergency supplies and resources.

The position of Director or Emergency Operations Manager, should be established to head the Organization. This position should report directly to the Superintendent or governing board and should be directly responsible for the development of all school emergency preparedness programs and procedures.

The Director or Emergency Operations Manager of the Organization should also be responsible for the annual development of an emergency operations budget and the presentation of such budget to the governing board. Emergency Operations staff, as appropriate to the size of the district, should also be provided by each school district.

ESTABLISH AUTHORITIES FOR EMERGENCY OPERATIONS FUNCTIONS

Each school district should provide for the assignment of emergency responsibilities through directives, Board procedures, ordinance or authorities as customary to the district. Such authorities shall include, but not be limited to, assigning responsibility for:

* Central coordination (the Director of the Emergency Operations Organization), establishment of committees, task groups, etc.

* Training programs (staff and student)

* Security (site and personnel)

* Building inspection (in coordination with OSA or school district's structural engineer)

* Volunteer coordination

* Emergency resources and materials

* Budget and emergency procurement

* Non-structural hazard mitigation

* Liaison with local government, relief agencies, other school districts.

Upon establishment of broad authorities, emergency plans and procedures can be developed. Plans, with appropriate details for emergency response actions, need to be updated and revised periodically. Ordinance and authorities do not change unless major changes in responsibility occur.

ESTABLISH AN EMERGENCY PERSONNEL POLICY

In order to provide for good personnel practices and employee awareness of district policy, and in order to lessen a district's potential exposure to personnel complaints and litigation after a disaster, an Emergency Personnel Policy should be established by all school districts. This Policy should be published and provided immediately to all district employees and should include, but not be limited to:

* A description of school district employees' responsibilities during and after an emergency

* A description of the school governing board's policy regarding the use of vacation time, sick time, compensated time off, during a disaster

* A policy statement regarding overtime during a disaster.

ESTABLISH A POLICY REGARDING THE NEEDS OF THE SCHOOLS

The Katz mandate requires that plans be developed for the use of schools as community shelters.

Schools have traditionally been used as community shelters after emergency incidents. Many school districts need to be aware that local agencies also plan to use school sites as casualty collection areas, command posts for local emergency responders, assembly areas, and other community needs.

Since educational programs would certainly be impacted by these potential uses of school sites, governing boards should develop policy and contingency plans on how and when they will resume normal operations. Schools need to develop policy guidelines for:

* Alternate uses of school facilities over extended periods of time,
* Use of school facilities in conjunction with emergency uses and,
* Use of school staff for emergency vs educational functions.

ESTABLISH LIAISON WITH LOCAL GOVERNMENT AND OUTSIDE AGENCIES FOR MUTUAL AID

School districts need to be aware of the resources and the plans of other local agencies involved in emergency response. During a disaster the contacts and the interaction of all the "players" is vital. Communication prior to a disaster enhances a district's ability to coordinate emergency response with outside agencies.

School districts also need to be aware of emergency plans and the resources of local agencies. Mutual aid agreements for provision of specialized equipment, and the establishment of direct communications with the local emergency operations center should also be considered. Regular liaison and the establishment of working relationships provides for sharing of ideas, plans, and resources which would not be possible if initiated at the time of a disaster.

ESTABLISH A POLICY AND CRITERIA REGARDING SCHOOL CLOSURE AND RETURN TO NORMAL OPERATIONS IN TIMES OF MAJOR EMERGENCIES

Since school districts may need to halt or alter their normal operations as a result of a major emergency, a set of criteria and established procedures and guidelines needs to be developed for such emergency closures. Guidelines need to be provided regarding building safety, availability of qualified personnel, and the psychological well-being of staff and students. Likewise, standards for return to modified or normal school operations also need to be developed.

ESTABLISH A POLICY FOR THE RELOCATION OF SCHOOLS, OFFICES AND SITES

In the event of a major emergency, some schools, offices, and operational sites may be rendered useless. In such an event, alternate sites need to be identified. Establish policy guidelines and priorities for available space. Consideration of Field Act requirements, logistics, supplies and retention of vital records should be part of policy guidelines for alternate work sites.

ESTABLISH A POLICY REGARDING THE USE OF CONVERGENT VOLUNTEERS, THE ACCEPTANCE OF FOOD, WATER, AND OTHER CONSUMABLE SUPPLIES FROM CONVERGENT SOURCES

School districts can anticipate that volunteers will offer to help in times of disaster. Since a school district's primary responsibility during a disaster is to care for and protect the children, volunteers need to be screened in order to eliminate those who could present a danger. Supplies such as food and water also represent a possible danger when the source and handling of the supplies is unknown. Criteria are needed for handling and dissemination of these supplies.

ESTABLISH A POLICY FOR PROTECTION OF VITAL RECORDS

Schools have a responsibility to protect student grades and records. Arrangements for backup and retention of these vital records and emergency procedures for paying school district staff should be ensured to provide the orderly operation of the district during recovery from a disaster.

III. Earthquake Damage Assessment Procedure

RATIONALE

While a strict reading of AB 3730 might have interpreted this portion to deal only with the assessment of a school for use as a community shelter prior to an earthquake, it was the desire of the Chair to expand the scope to include assessment during and after an earthquake for a more complete operational picture.

APPROACH

Task force members readily accepted this challenge and called upon members of the Structural Engineers of California and members of the Office of the State Architect, Structural Safety Section to provide suggestions and procedures for determining the safety and useability of a school building under the full range of possibilities. Some of these suggestions would require legal agreements and possible changes in current law.

RECOMMENDATIONS

It is recommended that governing boards in all California school districts develop policy as follows:

1. Authorize a structural evaluation of all those buildings that could potentially be used as a community shelter. (see Part A.)

2. Conduct a non-structural hazards inventory of all district buildings and immediately remedy those hazards that represent the greatest threat to life safety. (see Part B.)

3. Develop written contingency plans for how structural damage assessments will be conducted after a damaging earthquake. Public school districts should be aware that local building departments do not have jurisdiction over public school buildings, and special arrangements will have to be made. (see Part C.)

A. Suitability Assessment

SUITABILITY FOR USE

The entire school may not be suitable as a shelter. Each structure should be analyzed

for its adaptability as a shelter facility. Auditoriums, gymnásiums, multi-purpose rooms and cafeterias are the primary structures recognized for use as a shelter. In conjunction with the buildings, the availability of potable water and toilet facilities are a major concern when analyzing a building as a prospect. The availability of showers, laundry facilities, and a kitchen for food preparation should also be considered. Structures that have adequate heating and air conditioning capabilities are also of great importance. When all of these considerations are analyzed it can be determined which structures on a particular school site can be used as a community shelter after an earthquake. Recommendations can also be made on the occupant load the shelter can sustain.

STRUCTURAL INVESTIGATION

Significant changes have occurred in building codes due to knowledge gained from recent earthquakes. Therefore, buildings constructed after 1975 should be selected as possible community shelter sites. A structural assessment of the pre-1976 buildings by a structural engineer is necessary if these buildings are expected to be used as community shelters. Preferably, this engineer should be an OES volunteer, since he/she may be needed to assess the building for damage after the earthquake.

The selected structures may lie within an Alquist-Priolo Special Seismic Study Zone. Structures within this zone require a geologic hazard report. The structural engineer should have a copy of this report when assessing the pre-1976 buildings.

A mechanism for funding this structural assessment and any geologic hazard reports is required.

LIFELINE INVESTIGATION

The selected community shelter building should have a thorough investigation made of its lifeline systems before a disaster occurs. If the systems have faults, these should be modified to insure continued use during and after an earthquake. Communication lines, water lines, electrical lines, gas lines and waste disposal lines should all be checked for detailing and for their capacity to accommodate large numbers of people. The detailing, whether buried or above ground, should be analyzed for its ability to resist induced loads during an earthquake with no damage or minor damage.

The building structural system should be analyzed for expected lateral movement and the lifeline connections to the building should be made to work with the building movement as required. Flexibility may need to be designed into these connections. It may not be necessary for an entire lifeline system to be capable of withstanding an earthquake, but it should be determined what portion of the lifeline system, water, electrical, gas or waste disposal should be defined as essential.

Elevated tanks and mechanical equipment supported on rails or slabs should be checked for positive anchorage. It is also good practice to verify that flexible connections for all fuel, cooling water, exhaust and electrical attachments are installed. Any deficiencies in these connections should be corrected.

Each facility will have its own special problems. These must be addressed and treated individually, applying a degree of conservation depending on the nature of the problem.

SAFETY/INDUSTRIAL HYGIENE ASSESSMENT

In order to insure safety of the school staff and student population following an earthquake, a complete building damage assessment should be implemented by professional building site crews before and after the earthquake or disaster. All building systems including hazardous materials, ventilation, alarm systems, generators, and other nonstructural building components must be identified and evaluated in this assessment before the earthquake occurs to determine the potential life safety affects.

Secondary earthquake problems such as chemical leaks, water main breaks and ruptures of other systems could result in increased mortalities in an earthquake and result in substantial malfunctioning and damage of all systems and threaten rescue and evacuation procedures. An emergency response team consisting of on site school staff population should have current training and familiarity with all these systems and should be readily available for immediate action following an earthquake. All emergency shut off valves, fire systems, alarm panels, and hazardous material clean up/debris clearance supplies will require standard operation procedures and protocols. These emergency provisions should be clearly documented and outlined strategically for those personnel involved in emergency response.

In addition to comprehensive school building damage assessment, community wide damage evaluations must be implemented as well. All surrounding businesses and buildings in close proximity to the school need to be evaluated before and after an earthquake for safety hazards. Building systems including heating ventilation, air conditioning units, hazardous material systems, fire suppression equipment, alarm systems and unsecured non- structural fixtures and materials all require special handling.

As in schools all these systems need to be identified and monitored for life safety hazards which could impact nearby schools. All the school emergency response teams must have standard operating procedures and protocols to manage the affects of business interruption and damage in their communities.

B.Identification and Reduction of Nonstructural Hazards

IDENTIFY NONSTRUCTURAL HAZARDS

The nonstructural portions of a building include every part of it and all of its contents with the exception of the structure, or in other words, everything except the columns, floors, beams and load-bearing walls. Common nonstructural items include ceilings, windows, office equipment, computers, files, air conditioners, electrical equipment, furnishings, lights, inventory stored on shelves, etc. Typically nonstructural items are not analyzed by engineers, and may be either specified by architects, mechanical engineers (who design heating-ventilating-air conditioning systems and the plumbing for larger buildings), electrical engineers, or interior designers, or are purchased without the involvement of any design professional by owners or tenants after construction of a building.

In public schools in California, nonstructural items are not required to undergo the same rigorous review that the structural design faces. Since the rigorous structural review means that public school buildings are among the safest structures in California, public school administrators should focus their attention on these nonstructural hazards, particularly those that represent a significant threat to life safety.

HAZARDS THAT REQUIRE ARCHITECT/ENGINEER EXPERTISE TO IDENTIFY AND/OR REDUCE.

Some of the potential nonstructural hazards at a school site may need to be identified, remedied or at least reviewed by an architect or engineer. In general, those items that should be reviewed by an architect or engineer include heavier items, items that are up high and electrical items. School officials can use their judgement in deciding which items might require such a review, depending on the quality and size of their maintenance staff, volunteers who are available, etc.

Refer to Appendix A for two samples of Nonstructural Hazards Checklists. It is suggested that an architect/engineer's review might be helpful when inspecting your school for nonstructural hazards.

PRIORITIZE HAZARDS IN TERMS OF LIFE SAFETY

Since many, if not all, schools have significant constraints on the resources available to them, fixing all nonstructural hazards at the site may be impossible. Schools that would like to eventually remedy all the hazards on their lists would find it useful to set priorities for those hazards that should be addressed first. As general guidance, it is suggested that schools first fix those hazards that represent the greatest threat to life

safety and those hazards that are very easy to fix and have no costs or minimum costs associated with them (moving heavy boxes from tops of cabinets, moving furniture, etc.).

School officials should understand that all hazards can, under the right (or wrong) circumstance represent a significant threat to life safety, depending on location and size. For example, small spotlights overhead might not represent a great threat, yet large spotlights would. School officials need to use their own judgement and common sense in identifying hazards that they will fix first. Try to imagine what would happen in a room if everything were to start shaking.

In general, the following types of items would likely pose the greatest life safety threat: heavy items, sharp items, items above head, hazardous materials and chemicals, and electrical connections. Again, we refer you to Appendix A for samples of Hazard Identification Checklists.

IMPLEMENT NONSTRUCTURAL HAZARD REDUCTION

There are a variety of ways that a school can implement a nonstructural hazard reduction program. Students can be used for some of the simpler tasks, as well as parent volunteers. The maintenance staff can probably handle most of the items, and an architect or an engineer may need to be called in for some of the more difficult items, as suggested above.

Students in elementary schools can do the following, as part of a class project:

* Move desks and tables so that they won't slide and block exits
* Move valuable, fragile art objects or trophies so that they won't break or break something else
* Restrain or move potted plants or miscellaneous heavy items placed on top of file cabinets or other high locations

Shop students in high schools and parent groups, can:

* Secure desktop computers
* Secure file cabinets at their tops to the wall
* Install latches on file cabinet drawers
* Restrain large and heavy office machines
* Connect wall mounted objects to structural framing
* Correctly mount heavy or potentially sharp wall decorations
* Restrain refrigerators or ranges
* Correctly mount fire extinguisher
* Secure display cases or aquariums
* Restrain laboratory chemicals on shelves
* Install closed eye-hooks for hanging plants, mobiles or displays
* Restrain water heaters

* Brace freestanding, movable partial height partitions
* Tie concrete tables and benches to their legs

THOSE TASKS THAT WOULD PROBABLY REQUIRE A MAINTENANCE STAFF:

1. Equipment and Furnishings

   a. Attach tall cabinets, bookshelves, coat closets to the wall or back-to-back to each other
   b. Secure floor-supported freestanding shop equipment
   c. Anchor weight room equipment and racks

2. Hazardous Materials

   a. Secure compressed gas cylinders
   b. Brace storage racks for hazardous materials

3. Overhead Elements

   a. Make hanging light fixtures free to swing 45 degrees minimum
   b. Attach decorative ceiling panels or latticework
   c. Secure spot lights
   d. Secure chandeliers

4. Electrical Equipment

   a. Secure fluorescent light bulbs and lenses
   b. Secure emergency battery-powered lights

5. Windows

   a. Apply shatter-resistant film to glass

C.Structural Assessment After the Earthquake

CONTINGENCY PLANS

Given the fact that every school site in the State may be used as a community shelter, school districts should make efforts to have written contingency plans detailing specific actions to be followed after a moderate to strong earthquake.

STRUCTURAL ASSESSMENT

After the earthquake and possible aftershocks have occurred, school sites will have to be assessed for structural safety to determine if the buildings can be safely occupied. There are basically two possible scenarios.

SCENARIO ONE - BEST CASE

The first would assume that lines of communication are functioning and that roads to the facility have not been affected and are open. Under these circumstances the school district's plan should list the appropriate agencies that should be contacted. High on this list should be Office of State Architect/Structural Safety Section (OSA/SSS) area offices - Los Angeles, San Francisco and Sacramento Headquarters. Each of these offices will have a limited number of structural engineers available to assist in assessing the safety of school buildings.

If OSA/SSS does not have an available structural engineer, school districts should then contact the county Office of Emergency Services (OES) and request the aid of their professional engineer organization volunteers. This volunteer effort between private consulting engineers and (OES) makes engineers available from outside the affected areas. Usually these engineers would not be available during the first 72 hours. However it is quite feasible that OES could modify their policy to allow local engineer volunteers to be assigned to respond to specific site(s) after an earthquake.

The next step in the plan would be to have written assessment reports that were prepared prior to the emergency, readily available for the engineer whose task is to assess the facility after the earthquake. Preferably the pre-earthquake and post-earthquake assessment should be done by the same engineer. Realizing this may not always be possible, the pre-earthquake assessment report should try to identify the key structural elements of each building; those elements whose structural failure would make the building unsafe for occupancy. This written information will facilitate a prompt assessment of the building even for an engineer who has not previously visited the school site.

SCENARIO TWO - WORST CASE

The second scenario assumes that neither lines of communication nor roads are functional. Under these circumstances it is suggested that school districts arrange with OES to have a nearby designated engineer automatically report to the school site(s). This part of the plan should set specific guidelines under which the designated engineer is to be activated. Such guidelines could be a given earthquake magnitude, if known, of an established damage level. This suggested designated engineer procedure may work quite well in large urban centers where there is availability of structural engineers.

The procedure may not work for small and rural communities where no structural engineer would be available. For these localities a possible solution would be to have a structural engineer and a local engineer, preferably an OES volunteer, conduct the site's pre-earthquake assessment. The structural engineer would point out to the local engineer the critical elements of the building that he would have to inspect after the earthquake, and the extent of damage that would necessitate the closing of the building(s). The local engineer would be the designated person to report to the school site to conduct the safety assessment.

RED CROSS PROCEDURE FOR SHELTERS

Common procedure of the Red Cross is not to enter a building until a public official certifies that the building is safe to occupy. However it should be noted that an Office of State Architect engineer or qualified Office of Emergency Services volunteer are the only persons eligible to certify safety of school buildings.

PROMPT POST-EARTHQUAKE ASSESSMENT

The prompt post-earthquake assessment of school buildings is the most important element in the utilization of school sites as community shelters. School districts' earthquake preparedness plans should take into consideration the need for rapid assessment.

IV. Equipment and Supplies

RATIONALE

While this is outwardly the most straight forward of AB 3730 requirements, it is also the topic that has caused significant confusion and expenditure of funds for disaster preparedness. The clear direction to this group was to plan for a period of 72 hours in which no outside help or supplies would be available. This was considered the median "worse case scenario" for a typical school district that was financially feasible to plan and stock for.

APPROACH

Utilizing the expertise of Task Force members in the field of disaster planning and emergency medicine/first aid, a suggested lists of materials and supplies were determined.

RECOMMENDATIONS

It is recommended that governing boards in all California school districts adopt a policy to acquire the following emergency and medical supplies.

Equipment and Supplies

Schools should store adequate supplies for students, faculty and administration in the event a disaster occurs during school hours, leaving students to be cared for until help arrives or they are released to authorized persons.

Although some schools have been predesignated as community shelters this list reflects supplies for school use only. If the school is used as a community shelter, mass shelter needs go beyond school capabilities, and supplies would have to be brought in.

The following list contains items schools should consider having on hand to provide minimum support during as extended crisis.

List of Emergency Supplies and Equipment for School Sites

Water

General Care

Bags, plastic trash
Bags, plastic sealable
Baking soda for sanitation purposes
Batteries, assorted extra (flashlight, radio)
Blankets (disposable, insulated, foil)
Bleach
Buckets
Bullhorns
Can opener, manual
Candles*
Cups, paper or plastic
Dust masks
Extension Cords
Flashlights
Gloves
Goggles
Handy Wipes
Identification Tags
Lanterns with fuel or batteries (long service, heavy duty)
Light sticks
Masking tape
Matches*
Newspapers
Paper towels
Permanent markers/fluorescent
Radio, battery operated
Rope or tape for boundary markings
Sanitary napkins
Soap
String
Tarps/poly sheeting (heavy duty)
Tissues (Kleenex)
Toilet paper
Traffic cones
Trash cans, 20 gal. plastic
Walkie Talkies - Site communication
Water-filled containers

Wire

Extrication tools

Fireman's axe
Chain (heavy duty) 20' with hooks
Crowbars
Extension cords
Hammers
Hard hats
Picks
Pipe wrenches 12", 16", 24"
Pliers
Rope
Saws
Screwdrivers
Shovels
Sledgehammers
Wire Cutters
Wrenches, extra for water and gas shut-off

School Use Supplies

Notebooks
Paper
Pencils
Pens, ballpoint

* It seems appropriate to point out that candles and matches should not be used in any areas where there is even a remote possibility of gas leaks. The risk of ruptured, leaking gas lines must be completely, totally and absolutely mitigated before striking a match to light a candle for illumination.

MEDICAL SUPPLIES
(1 kit/250 students for 3 day survival)

Supplies	Quantity
Ace Wraps	5
Ammonia Inhalants	1 box
Alcohol Towelettes	4 boxes
Applicators, Cotton-tipped	1 pkg.
Bags, Paper	10

Plastic Sandwich	1 box
Trash, large	5
Bandages, Roller 2" (Kling)	30
Roller 3" (Kling)	30
Stockinette	Optional
Triangular	30
Bandaids, Regular 1", Extra Large	1 box each
Betaine Towelettes	4 boxes
Blankets, Disposable	60
Foil Shock (Mylar)	40
Bleach, small bottle	1
Burn Sheet	2
Cold Packs	20
Cotton Balls	100
Cups, Paper 3 oz.	100
Dressings, Eye	20
Gauze 3x3 (Sponges)	200
Gauze 4x4 (Sponges)	200
Trauma (Large)	20
Eye Irrigating Solution	1 bottle
Flashlight with Batteries	1
Gloves, Vinyl	1 box
Green Soap	2 bottles
Magazines (for splints)	5
Medic First Aid Book	1
Medicine Dropper	1
Normal Saline 500 ml.	5 bottles
Petrolatum	1 container
Pins, Safety	20
Sanitary Napkins	20
Scissors, Blunt	1
Splints, Arm	2
Leg	3
Sugar	10 packets
Tape, 1"	5 rolls
Tissues, facial	1 box
Toilet Tissue	2 pkgs.
Towelettes, Premoistened	1 box
Towels, Paper	2 pkgs.
Tweezers	1
Water, Distilled	2 gallons
Triage Tags	50
Identification Tags	50

Metal Clipboard	Optional
Notebook	Optional
Paper	Optional
Pens, Ballpoint	Optional
Equipment	
Basins (Disposable) or Freezer Plastic Bags	50
Stretchers	2
Backboard	2 Necessary
Equipment and Supplies	

Appendix A: Hazard Identification Checklists

These two structural hazards checklists are provided for your information to aid in examining your school for hazards. See Section IV, B. Identification and Reduction of Nonstructural Hazards for more information.

CHECKLIST OF NONSTRUCTURAL EARTHQUAKE HAZARDS

Use this checklist to help you complete a nonstructural hazards survey at your school site. Once you have completed the survey those boxes that have checks in them are items that you need to fix.

EQUIPMENT AND FURNISHINGS

- ❑ Are desktop computers unsecured?
- ❑ Are the tops of tall (4- or 5-drawer) file cabinets unsecured at their tops to the wall? **(LS)**
- ❑ Do file cabinet drawers lack latches?
- ❑ Are large and heavy office machines unrestrained and located where they could slide a few inches and fall off counters to the floor or roll or slide a couple of feet and block exits?
- ❑ Are wall mounted objects over 5 lbs. not connected to structural framing?
- ❑ Are tall cabinets, bookshelves, coat closets unattached to the wall or unattached back-to-back to each other? **(LS)**
- ❑ Are desks or tables located such that they may slide and block exits?
- ❑ Are tall storage racks not cross-braced in both directions or, for racks significantly taller than wide, are large anchor bolt connections to the concrete slab lacking? **(LS)**
- ❑ Are heavy or potentially sharp wall decorations insecurely mounted (without closed eye-hooks for example?)
- ❑ Do valuable, fragile art objects or trophies lack protection against tipping over and breaking glass or sliding off shelves or pedestals?
- ❑ Are refrigerators or ranges unrestrained by built-in kitchen cabinetry or attachments to floor or wall? **(LS)**
- ❑ Is floor-supported freestanding shop equipment unsecured against overturning (if about twice as tall as wide) or sliding (if sliding a couple feet would cause a hazard)? **(LS)**
- ❑ Are fire extinguishers insecurely mounted?
- ❑ Are potted plants or miscellaneous heavy items placed on top of file cabinets or other high locations without restraint?
- ❑ Are display cases or aquariums unprotected against overturning or sliding off tables?
- ❑ Are weight room equipment and racks unanchored or weights not properly stored?
- ❑ Is freestanding equipment on wheels not locked against rolling?

HAZARDOUS MATERIALS

- ❑ Are compressed gas cylinders unsecured, or secured only with one loose or weak chain?
- ❑ Are laboratory chemicals on shelves unrestrained? **(LS)**
- ❑ Are gas tank legs unanchored to a concrete footing or slab? **(A/E)** **(LS)**
- ❑ Are containers of hazardous materials stored on unbraced storage racks or tall stacks? **(LS)**
- ❑ Do gas pipes lack flexible connections to structures that may sway or slide? **(A/E)**

OVERHEAD ELEMENTS

- ❑ *Does the suspended ceiling lack diagonal bracing wires?* **(A/E)** **(LS)**
- ❑ *Are the fluorescent light fixtures merely resting on the hung ceiling grid, without another support attached to the structure such as at least two hanger wires per light fixture?* **(A/E)** **(LS)**
- ❑ *Will hanging light fixtures hit fixed objects or each other if allowed to swing 45 degrees minimum?* **(LS)**
- ❑ Are decorative ceiling panels or latticework insecurely attached?
- ❑ Are overhead mounted objects not connected to structure?

(A/E) *indicates an architect or engineer should be consulted.* **(LS)** *indicates a life safety hazard.*

Items in italics are generally already done in public schools if part of recent approved construction.

CHECKLIST OF NONSTRUCTURAL EARTHQUAKE HAZARDS

Use this checklist to help you complete a nonstructural hazards survey at your school site. Once you have completed the survey those boxes that have checks in them are items that you need to fix.

- ❑ Are spot lights unable to remain securely attached if they were shaken?
- ❑ Do sound system speakers in elevated locations lack anchorages to structure?
- ❑ *Are suspended space heaters, especially gasfired, unbraced and/or lacking flexible gas connections?* **(A/E)**
- ❑ Do hanging plants, mobiles, or displays lack closed eye-hooks, or would they hit a window if they swung 45 degrees?
- ❑ Could chandeliers swing and hit each other, windows, roof trusses, or walls?
- ❑ *Are air distribution grills or diffusers only loosely mounted (rather than screwed to adequately supported sheet metal ducts or to the ceiling or wall)?* **(A/E)**
- ❑ Are large metal air distribution ducts, especially if they are suspended a few feet, without diagonal bracing? **(A/E)**
- ❑ Have heavy objects been removed from the tops of shelves? (Remember for 5 & 6 year olds, overhead objects are only 3 feet off the floor.) **(LS)**

ELECTRICAL EQUIPMENT

- ❑ Will fluorescent light bulbs and lenses fall if shaken violently?
- ❑ Will emergency battery-powered lights fall off shelf supports if shaken violently?
- ❑ Is essential communications equipment not secured?

MECHANICAL EQUIPMENT

- ❑ *Are the water heaters unrestrained?*
- ❑ *Is the furnace or boiler unrestrained?* **(A/E)**
- ❑ *Are there unreinforced masonry incinerator chimneys on the school site?* **(A/E) (LS)**
- ❑ *Are fans, chillers, pumps, or other heating-ventilating-air conditioning equipment that is typically found in mechanical rooms unrestrained or mounted on vibration-isolation springs without seismic restraint added?* **(A/E)**
- ❑ *Are large diameter pipes unbraced or do pipes cross expansion joints without accommodation for movement?* **(A/E)**
- ❑ *Are the fire sprinkler risers without a v-brace to the wall, or are the large diameter sprinkler pipes without diagonal braces to the structure above?* **(A/E)**
- ❑ *Are there no flexible connections to allow for movement from pipe to structure or equipment?* **(A/E)**

PARTITIONS

- ❑ *Are freestanding, movable, partial-height partitions (especially if supporting bookshelves) inadequately braced?*
- ❑ *Are masonry partitions unreinforced (usually brick or hollow tile walls in pre-1933 buildings in California?)* **(A/E) (LS)**
- ❑ *Do lightweight drywall partitions extend only as high as the hung ceiling, without braces or other support by the structure above and are these partitions used as lateral support for tall shelving or cabinets?* **(A/E)**
- ❑ Are clear panels of partitions not made of plastic or safety glass?

WINDOWS

- ❑ *Are large panes of non-safety glass present, or is it unknown whether the mounting of the panes was designed by architect/engineer to accommodate expected seismic distortion of the surrounding structure?*
- ❑ *Are transoms (glass panes over doors) of non-safety glass?*

(A/E) *indicates an architect or engineer should be consulted.* **(LS)** *indicates a life safety hazard.*

Items in italics are generally already done in public schools if part of recent approved construction. **2**

CHECKLIST OF NONSTRUCTURAL EARTHQUAKE HAZARDS

Use this checklist to help you complete a nonstructural hazards survey at your school site. Once you have completed the survey those boxes that have checks in them are items that you need to fix.

EXTERIORS

- ❑ Are decorations or appendages inadequately attached? **(A/E)**
- ❑ Are statuary or decorative objects unanchored? **(A/E)**
- ❑ Are tall backboards or fences not supported by pressure treated wood posts or galvanized metal posts?
- ❑ *Are fences made of concrete, concrete block, stone or brick, inadequately reinforced to resist earthquakes, or is their earthquake resistance unknown?* **(A/E)**
- ❑ Are large trees leaning or in poor health?
- ❑ Is signage inadequately secured, especially if heavy?
- ❑ Are concrete tables and benches inadequately tied to their legs?

(A/E) *indicates an architect or engineer should be consulted.* **(LS)** *indicates a life safety hazard.*

Items in italics are generally already done in public schools if part of recent approved construction.

HAZARD IDENTIFICATION CHECKLIST

SITE_____ REVIEWED BY_____ REVIEW DATE_____

HAZARD	OK ?*	LOCATION	DATE OF MITIGATION
EQUIPMENT			
Desktop computers not secured			
File Cabinets not secured (4 & 5 drawer)			
File Cabinets not equipped with lock latches			
Heavy office machines not secured			
Mainframe computer equipment not braced			
Tall storage cabinets not attached to wall			
Tall lockers not attached to wall			
Storage racks not braced			
Heavy wall decorations without closed hooks			
Art objects not secured (to prevent sliding)			
Refrigerators not built in (unrestrained)			
Electric Ranges not build in (unrestrained)			
Free standing equipment (on wheels) not chocked			
Spaces under desks not easily accessible			
Display cases/aquariums unprotected (sliding)			
Potted plants on file cabinets not secured			
Heavy objects on file cabinets not secured			
HAZARDOUS MATERIALS			
Compressed gas cylinders not secured properly			
Lab chemicals on shelves not restrained			
Tanks or vats not braced			
Pipes lack movement ability where connected			
Pipes lack movement ability through building			
Automatic gas shut off valves in place			
Containers stored on unbraced storage racks			
Containers stored on tall pallet stacks			
Flammable liquids not in closed containers			
Combustible waste not in covered containers			
Storage rooms for flammables do not have expolsion proof lights			

* "Y" = Yes; "N" = No

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HAZARD IDENTIFICATION CHECKLIST

SITE _____ REVIEWED BY _____ REVIEW DATE _____

HAZARD	OK ?*	LOCATION	DATE OF MITIGATION
OVERHEAD ITEMS			
Suspended ceiling without diagonal bracing wires			
Florescent light fixtures without support			
Hanging light fixtures unable to swing free			
Decorative ceiling panels not securely attached			
Spot lights not securely attached			
Elevated sound speakers not anchored			
Gas heaters not braced			
Hanging plants do not have closed eye hooks			
Hanging plants do not swing free (windows)			
Air distribution grills loosely mounted			
Suspended metal air ducts no diagonal bracing			
Electric Ranges not build in (unrestrained)			
ELECTRICAL EQUIPMENT			
Emergency generator not secured			
Emergency power batteries not secured			
Generator fuel tanks not braced			
Emergency battery-powered lights not secured			
Transformers or tall switches not anchored			
Essential communications equipment not secured			
Large conduit without allowance for distortion			
Exposed wires and frayed cords			
Junction boxes, outlets, switches not covered			
Metal-fixed electrical equipment not grounded			
Electrical appliances not grounded			
Breaker switches not identified as to use			
Flexible cords/cables running through doors windows or holes in ceiling or wall			

* "Y" = YES; "N" = NO

HAZARD IDENTIFICATION CHECKLIST

SITE_____ REVIEWED BY_____ REVIEW DATE_____

HAZARD	OK ?*	LOCATION	DATE OF MITIGATION
PARTITIONS			
Panels not plastic or safety glass			
Free standing panels not adequately braced			
Masonry partitions not reinforced (pre 1933)			
Ceiling high drywall not braced or supported			
Unbraced drywall used as support for shelving			
Unbraced drywall used as support for cabinets			
WINDOWS			
Large panes of non-safety glass present			
Windows not designed for seismic distortion			
Transoms of non-safety glass present			
EXTERIORS			
Decorations/appendages inadequately attached			
Statues or decorative objects not anchored			
Fences inadequately reinforced			
Large trees leaning or unhealthy			
Heavy signs inadequately secured			
Lights inadequately attached			
Gas meter not secured against sliding			
HAZARDOUS SUBSTANCES INVENTORY			

* "Y" = YES; "N" = NO

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HAZARD IDENTIFICATION CHECKLIST

SITE _____ REVIEWED BY _____ REVIEW DATE _____

HAZARD	OK ?*	LOCATION	DATE OF MITIGATION
MECHANICAL EQUIPMENT			
Water heaters not restrained			
Furnace or boiler not restrained			
Fans, pumps (air conditioning) not restrained			
Large pipes not braced			
Fire sprinkler risers not V-braced to walls			
Fire sprinkler pipes not diagonally braced			
FIRE EXTINGUISHERS			
Not correct for type of combustible			
Not located along normal paths of travel			
Not fully charged and in designated places			
Locations not fully free from obstruction			
Not serviced or tagged in last year			
SPRINKLER SYSTEMS			
Water flow alarms not on all systems			
Systems not periodically inspected			
Clearance from top of storage less than 18"			
HAZARDOUS SUBSTANCES INVENTORY			

* "Y" = YES; "N" = NO

Appendix B: Task Force Member Monographs

To further expand the discussion on disaster preparedness and planning, task force members were given the opportunity to write monographs expressing specific opinions, minority views or specific proposals to supplement or contrast with the report. The opinions expressed are solely those of the writers and do not necessarily reflect the opinion of the Department, the writer's employers, or the task force.

Public Schools as Community Shelter Sites

Carol Horne, Emergency Services Coordinator
Office of Emergency Services

POTENTIAL SHELTERS

California schools should be considered potential shelter sites. Although secondary schools are preferable because desks and bathroom facilities in elementary schools are geared to small children, it is possible that in a disaster local authority may designate certain facilities whether or not they have been predesignated as shelter sites. A school must provide a safe and supportive care environment as a mass care shelter for the community and possibly for the school population of students and staff if a disaster should occur when school is in session.

WATER

Water will be the first item needed; and in order to provide feeding capability for an extended period of time, food must be prepared either in-house or catered. This may involve school personnel or an outside agency such as American Red Cross.

PERSONAL NEEDS

Cleanliness and sanitation must be provided for students as well as members of the community using the school for shelter. Adequate space must be set aside for resting and sleeping.

SECURITY

Security must be provided for the well being of the occupants. Some debriefing and crisis counseling will be needed for traumatized victims.

MEDICAL CARE

In order to provide some level of emergency medical care, prior arrangements for manpower, training, medical supplies, and coordination with local emergency medical services agencies would be helpful. School administrators should know their local Red Cross chapter personnel.

OPERATIONS

In order to facilitate the operation of a public school as a community shelter site, the

following issues should be considered by the school administrator:

- How to determine and maintain a safe and secure environment;
- How to determine capacity and capability of the school as a potential shelter site--for students and staff only--or as a community shelter;
- How to train staff for emergencies;
- Where to go for assistance;
- How to interface with public and other official relief agencies;
- How to identify resources/assistance from other response agencies in the community both in preparedness planning and in an actual disaster;
- How to prioritize limited resources before a disaster occurs;
- How to return to normal--recovery process.

A Proposal for School Earthquake Preparedness Medical Life Safety Programs

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Mountain View, CA
and
Disaster Survival Planning
San Francisco, CA

EARTHQUAKE!

An earthquake is a sudden, serious natural disruption to life, threatening and causing injuries to a number of people, in excess of those which the system can normally handle. School children would be a particularly vulnerable segment of the population in an earthquake disaster due to their youth and inexperience. Adding to the problem there would be a small number of adults in most schools to assist a large number of frightened students during and in the aftermath of an earthquake emergency. Further complicating the problem is the lack of training and instruction of student and staff. Lack of preparatory measures and plans for evacuation of school buildings in a sudden emergency pose an increased risk should a major earthquake occur in California.

WORST CASE SCENARIO

The worst case scenarios, earthquakes greater than magnitude 7 on the richter scale, will result in multiple mortalities, mass casualties, and sever trauma victims. Non-structural building elements such as unattached book shelves and light fixtures, will become lethal objects during earthquake ground shaking, even in buildings designed to meet the current requirements of the California building codes. Combined with the additional risks of school buildings which are not structurally adequate to resist earthquake forces, and the apparent lack of attention or commitment to complying with safety provisions, the potential for injury and loss of life among students and school personnel in a school-day disaster is enormous and reasonably foreseeable.

SAFE PUBLIC BUILDINGS

The public should be able to expect public buildings to provide for the safety and welfare of the occupants especially those buildings that house "dependent" populations such as students. Since students are mandated by state law to attend school, they are "dependent" on the state to make adequate provisions for their safety and welfare. "Dependent" populations may require a higher standard of care than do "voluntary" populations for their safety and welfare.

72 HOUR ISOLATION

The reality in California is that most school districts will remain isolated from outside help from the community for at least 72 hours following a major earthquake. Disruption of medical lifelines, limited transportation access, and higher risk industrial areas will monopolize a community's resources and pose significant delays in medical emergency response times.

MEDICAL LIFE SAFETY PREPAREDNESS

While the state and its jurisdictions cannot delay or control the occurrence of a major damaging earthquake, steps can be taken at both the local and state levels of government to reduce the vulnerability of school building occupants. The element within the control of the state and its jurisdictions is the development of a state-wide Medical Life Safety Preparedness Program, and the timetable for the implementation of such a program, to reduce the loss of life from the inevitable earthquakes.

THE PROGRAM

Specifically, a program will need to be mandated which provides for special organization and mobilization of school emergency medical personnel. The Medical Life Safety Preparedness Program requirements for each school district will accomplish the following goals:

1. Minimize the number of casualties.
2. Prevent further casualties.
3. Rescue.
4. Provide triage, first aid, and casualty collection point operations.
5. Evacuate the injured.
6. Provide definitive medical care.

The orientation of school medical resources and medical treatment will need to be for immediate response; limited care targeted for projected injuries; and patient stabilization for transport, and will need to be integrated with the community's medical recovery plans. Each school will be accountable for providing the following Medical Life Safety Preparedness programs:

1. Triage and minor treatment (minimal 150 victims per 450 population for 72 hours).
2. Mass casualty collection points.
3. Written medical disaster plan (operational).
4. Medical life safety first responders (minimal 13 per 100 students).
5. Participation in community drills.
6. On-going plan evaluation.

REQUIREMENTS

The new medical life safety strategy for each school will need to require:

1. Medical disaster plan.
2. Emergency medical care directives for life safety team (including teachers and other administrative personnel).
3. Provision for training life safety teams.
4. Supplemental floor and team emergency supplies.

Each school district needs to provide food, water, medical and shelter supplies for employees during and after an earthquake. The premise underlying the recommendations is that a disaster has occurred which is large enough to require the school populations to stay at their work sites and be self-sufficient for 72 hours. This is consistent with Red Cross and other agency guidelines for response to a major earthquake and is considered a standard for on-site supplies provision.

IMPLEMENTATION

The school districts can prepare to meet staff and student survival supply needs by implementing the following actions:

1. Prepare refined estimates for the number of employees and students for whom supplies should be provided.
2. Identify minimum employee and student needs for 72 hours.
3. Solicit final cost estimates for survival supplies for employees and students (including accommodating growth in population and loss/damage to supplies).
4. Develop suitable storage facilities.
5. Obtain supplies that are easily portable and accessible that can be stored in the periphery of the building.
6. Provide for medical training of all personnel required to administer medical supplies.

School district administrators will need to prepare to manage procurement of supplies to support continued medical operations and administrative functions. The ability to be self-sufficient in the aftermath of a disaster and to procure supplies necessary to begin medical life safety recovery are critical to the school district's ability to successfully weather a disaster situation.

TRAINING

Training must accompany the use of all emergency supplies and equipment. Curriculum content needs to include:

1. Medic first aid or Red Cross first aid.
2. Light search and rescue.
3. Triage.
4. Advanced treatment strategies (transportation and extrication of victims).
5. Mass casualty collection point operations.
6. Shelter operations.
7. Community drills.

Each school district will need to rely on the available training resources in the community. Presently, medical management of mass casualties is normally provided for trained medical professionals only. The Red Cross, fire departments, independent consultants, and County Office of Emergency Services all offer courses which would prepare non-medical professionals in schools for medical response in an earthquake.

In addition to the training recommended above, the district should also ensure that its employees are educated regarding the district's disaster preparedness plan, particularly focusing on the pre- and post-event actions the district will undertake, and the emergency organizational structure and emergency assignments.

In order for the school district staff to provide the maximum benefits to the greatest number of victims, a well-defined and rehearsed contingency plan must exist. The disaster plan should be basic, simple and incorporate all of the emergency medical system including the pre-hospital phase, the inter-hospital system, and the community teams. The school district director should involve the police, fire, county and city authorities in the design and implementation of the plan which includes the on-going training.

The training must identify leaders ensuring that they are intelligent, well-trained, highly respected and confident decision maker. It should be kept simple, so that the personal initiative of such leaders and their ability to adapt to the various situations is not stifled. The disaster medical response training needs to delineate the divisions of authority and labor. This will allow school staff specialists to perform in their specific area, such as: rescue triage; casualty collection point operation and disposition of patients; control of rescue situation; morgue operations; record-keeping; and control of crowds and psychological support. Cross-training must occur to assure sufficient staff is available to meet the demands of unanticipated priority situations. All medical emergency response team members must have training bi-annually on:

1. Central communications.
2. Supplies.
3. Personnel.
4. Initial responder teams.
5. Rescue triage teams.
6. Casualty collection point teams.

7. Security teams.
8. Psychological impacts of disasters.

Overall, the speed of the response is not as crucial to the effective operation as is the coordination of the response by trained and experienced personnel.

COMMITMENT TO PREPAREDNESS

Renewed commitment via legislative mandates by the State Department of Education would be the catalyst for school districts taking the necessary actions to develop their medical life safety programs for earthquake response. Assuring the safety and survival of staff and student populations is the goal which will be achieved by mandating these recommendations.

A Proposal for an Effective State Contribution to Earthquake Safety for Our Children

Janet K. Bradford, Chief
Program Development and Administration
California Specialized Training Institute

BACKGROUND

This proposal will take advantage of the many virtues of the diversified, locally controlled manner in which our school systems are managed, minimize state expenditures by requiring local matching funds and encourage compliance with state laws and guidelines without creating a new bureaucratic structure to enforce it.

PROPOSAL

The State of California should provide matching funds to assist school districts to prepare themselves for an earthquake or other catastrophic event. The funds should be used for any eligible costs, such as the items on the list elsewhere in this report and would be available upon satisfying two conditions:

1) The requesting district/or school should have an emergency plan which has been reviewed by their respective County Office of Emergency Services. Since the most frequent "disconnects" in emergency response are between the school district and the county, review at the county level will emphasize the need for these two entities to work together. This also will relieve the state of what could be an administrative nightmare, if school district plans were reviewed by the state.

2) The requesting district/or school should provide a 50% match for any state funds which are requested. Local school boards should make the philosophical and financial commitment to preparedness. Examples of innovative techniques abound: PTAs have purchased protective film for school windows, parents have contributed emergency food and other supplies, principals have recognized that the creek outside can provide emergency water if only it could be pumped, etc. The match requirements will promote creativity and local commitment.

OTHER

Priority for the funds should be given to those districts in Seismic Zone 4.

CONCLUSION

This plan has the advantage of being workable at varying funding levels, since proposals would be solicited annually and qualifying proposals prioritized. A geographical distribution and district size guidelines should be implemented to assure consideration of those variables.

Role of the Site Administrator

By Michael D. Chambers AIA, Senior Architect
California Department of Education

In terms of disaster preparedness planning, no one individual will play a more pivotal or key role than the school site administrator.

During daily site operations the administrator should be in control of emergency response training and practice for handling a range of emergencies ranging from terrorism to catastrophic earthquake.

In the event of a disaster the administrator will have to maintain site security, organize emergency response, account for students and staff, coordinate use of site by outside emergency response providers, allocate available resources, coordinate neighborhood response and make decisions without backup or support.

In this writer's opinion, the site administrator's role has not been adequately identified, supported or even acknowledged by emergency planners or school districts. Irrespective of the type of program or planning model developed, the school site administrator will be and must be the sole authority on the school site. Unless, the site administrator has that authority and ability to function, an emergency situation will rapidly deteriorate into total chaos. To support this thesis, consider the following scenario.

Anytown, CA is hit with a 8.5 plus earthquake around 2:30pm. Communications, utilities, roads, etc are destroyed, out of commission, the school site is, for all intents and purposes, cut off. The site administrator, once everyone is accounted for and injuries handled, contacts the district emergency operations center for status update of emergency response on the district's portable emergency radio system. District responds that while the schools made it through with minor damage, any emergency support or supplies will not be available for 24 to 48 hours. District indicates that they are losing backup power and will be out of communications for sometime.

Previous planning has designated this school as a community shelter under Red Cross control and a secondary staging area for Army National Guard air medivac operations in the north field. Police and fire operations will use the school for a regional emergency operations center and there are 400 students and staff on site for the next 24 hours.

This scenario is perhaps over done, but the point is clear. School sites will be used for many different purposes during an emergency situation. The school district's and the site administrator's first responsibility is to the health and safety of the children and staff. The only way that this can be accomplished is if the site administrator is prepared to

take charge of the site and allocate, to the various responsible parties, the appropriate portions of the site for emergency use. This does not imply that the administrator is going to run emergency operations, rather what this means is that use of the site, security and overall responsibility for activities on the site must remain under the control of the site administrator until the last child has been safely delivered to a parent or guardian. The safety of the students must take precedence over any of the other activities slated to utilize school property.

While this may appear to be an overwhelming situation, training and clearly designated lines of command will enable the site administrator to keep everything organized and secure. Memoranda of Understanding (MOU) between the district and the various emergency agencies are critical to maintaining emergency operations on site. Clear delineation of responsibility and chain of command prior to a disaster will prevent a larger one.

It must be understood that the site administrator's role is one chiefly of coordination and control. The administrator has no business making operational decisions outside of school interests. However, the site administrator must be kept informed of current operations by non-school agencies to avoid or resolve site conflicts and to insure the security of students and staff.

Emergency preparedness planning at the district level must focus on the site administrator as the first line of defense in developing response plans and negotiating with outside agencies for the use of school sites as emergency shelters and operation centers. Training, communications and a clear line of command will make a significant contribution to the safety of students and staff and enhance the critical activities of emergency response teams during a major disaster.

It's Not My Fault
A Plea for Stronger School Earthquake Management Legislation

Ferne J. Halgren

Founder, Quakesafe, Inc.
Coordinator, School Earthquake Management Program,
UCLA Extension

Last April, school officials watched with pride as students and teachers obediently performed disaster drills as a show of their schools' preparedness. Yet, according to a teacher at one Los Angeles high school, "Improper routes were laid out to follow to assembly areas, ignoring potentially deadly hazards. These were, a 120 foot tall water tower directly at the end of the assembly area; high tension lines along and over the routes to safety; paths that lead between high walls and through narrow passages to get to "safety"; fences and gates which inhibit ingress to the assembly areas, causing crowding and potential for injury and further panic... " This is not atypical. Another teacher writes, "We have... a huge electrical unit right next to our school fence. It also has power wires that extend along the fence."

Most Californians believe that our schools are safe places to be in an earthquake. Yet they are not. The governor repeatedly vetoes legislation designed to increase school preparedness on the grounds that it is not needed. Although some pertinent legislation, resource materials, and technical assistance exist to aid planning, the vast majority of schools remain woefully vulnerable. No one wants to see children suffer. When the next damaging earthquake strikes during the school day, however, many needless injuries and deaths will occur. The purpose of this monograph is to demonstrate that stronger legislation is needed in order to overcome school officials' resistance to implementing school earthquake safety procedures.

In large part ignorance is to blame. Most teachers and site and district administrators believe that they have perfectly safe schools; perfectly good plans. For example, most would say that their disaster plan deals sufficiently with the problem of injuries by directing evacuation to the closest hospital. Although this makes sense for a localized disaster, such as a playground shooting, it is useless in an earthquake: in the M6.5 Coalinga quake the hospital directly across the street from the high school was incapacitated. Had the quake struck two hours earlier, school personnel would have had to rely on themselves to save lives. How many credentialed and classified staff have been trained in mass multi-casualty medical care? According to Bob Vert, district superintendent at the time of the Coalinga quake, most schools don't have a disaster plan--they have a plan for a disaster.

Ignorance can be banished by information. Through a variety of educational methods, UCLA Education Extension and QuakeSafe, a non-profit agency, have launched preparedness at countless schools simply by making parents, teachers and administrators aware of deficiencies in their school plans.

Far more subtle, and more difficult to overcome, are the defense mechanisms humans routinely employ to avoid dealing with unpleasantries. These include repression, the "What--Me Worry?" attitude of those who have relegated fear to their subconscious in order to remain oblivious to the threat; suppression, in which the individual is aware of the fear but refuses to deal with it; and denial, in which a person copes with threatening ideas by reinterpreting them so that they become less stressful. These defenses can and do adversely affect school officials' decisions regarding policy and planning for earthquake safety.

As an educator in the field of school earthquake preparedness, I have heard it all: The teacher who refused to attend a disaster planning meeting, saying, "Please, I don't want to talk about it, it scares me too much"; the head of a religious school who told me that it was not necessary to bolt bookcases to the wall because God will protect his children; the "no time, no money" mantra, epitomized by a superintendent who angrily wrote, "You do not have to decide if $90,000 in the... budget should go to teachers... a new bus... a new roof... new science textbooks... or a new sprinkler system... How fortunate you are !" These defenses preserve the educator's comfort level at the expense of childrens' safety.

It is understandable if school officials don't get around to preparing their own home for an earthquake; it is unconscionable if their emotional defenses prevent them from establishing, implementing and regulating programs that affect the safety of their students.

Some schools are prepared. Newland Elementary School in Huntington Beach performs an annual simulation drill during which older children, trained in search and rescue, practice transporting "injured" peers on stretchers. South Gate Junior High School, an inner-city school with more students (4000) and less time or money than most, completely rewrote and implemented its disaster plan to correct deficiencies discovered during the 1987 Whittier Narrows quake.

How did these schools accomplish so much? Well-prepared schools boast of a coalition of parents, teachers, and site administrators backed by strong district support. That adds up to a lot of people who were able to overcome their personal fears.

Unfortunately, most aren't.

Excellent resource materials are available to help schools upgrade their disaster plans. Pending funding, UCLA Extension will develop a program to provide training and implementation in non-structural hazard reduction, urban search and rescue, mass medical care, emotional trauma management, and other aspects or disaster preparedness and response, with plans to duplicate these programs throughout the UC system. But for teachers, principals, district superintendents and board members who cannot overcome their own fears, these resources are not enough. Direction must come from the top in the form of strong legislation which

--sets minimum standards for a school disaster plan,

--place an emergency preparedness coordinator in every district,

--mandates training in disaster response techniques, and

--establishes a graduated timeline for compliance.

Until the threat of legal noncompliance replaces the discomfort of facing up to the threat of a damaging quake, most school boards members, superintendents, principals and teachers will continue to say, "It's not my fault".

A Proposal For Aftershock Alert Status Procedure

Virginia Kimball

PROPOSAL:

School district governing boards should establish an Aftershock Alert Status procedure to be imposed for a one to three week period following a damaging earthquake in the school district or the surrounding community. This status would restrict potentially hazardous activities during the period when large aftershocks might reasonably be expected to occur, and would clarify the appropriate response to each earthquake during frequent earthquake activity, when some people might become complacent about the need for protective measures. The purpose of the proposal is to prevent injuries.

BACKGROUND:

Damaging earthquakes are followed by other earthquakes, most of which are progressively smaller and further apart. However, the typical sequence of aftershocks includes one or more earthquakes which approach the magnitude of the main shock. These aftershocks can and do cause injuries and severe damage. In addition to the danger of aftershocks, a small number (about 5%) of damaging earthquakes are followed by larger earthquakes.

For example, the M5.9 Whittier Narrows, CA earthquake of October 1, 1987, occurred on a Thursday morning at 7:42 am. Following a number of aftershocks in the next few days, an after-shock of M5.4 occurred Sunday morning, October 4 at 3:59 am. This aftershock caused further damage and injuries, even though it occurred when most people were home in bed. If this aftershock had taken place during school hours, there could have been many injuries, particularly if hazardous materials and equipment were in use.

During a period of frequent seismic activity, many people begin to respond more slowly to each earthquake, waiting to determine the degree of shaking before taking protective action. In order to prevent injuries, students and staff members must use the "duck-cover-hold" procedure each time an earthquake is felt.

DEFINITION:

The Aftershock Alert Status restricts activities which might be particularly hazardous during an earthquake, such as:

Chemistry laboratory experiments
Use of gymnastic and weight training equipment
Rope climbing
Cooking (using stoves)
Use of shop equipment such as power saws, drills, etc.
Use of high diving platforms

The Aftershock Alert Status also clarifies the response to aftershocks by requiring that students and staff members to use the "duck-cover-hold" procedure for every felt earthquake.

What Has Happened In Schools

Deane L. Ellickson
Rancho Valley Services, Inc

Fortunately, major California earthquakes have not occurred during school attendance hours. If the 1933 Long Beach quake had happened while classes were in session the student and faculty death toll would have been dramatic. Because of that possibility the Field Act was passed in 1933, mandating improved school building construction, to protect students and staff from the hazards of seismic activity in California.

During the 6.5 Sylmar earthquake in the San Fernando Valley on February 1, 1971 school buildings near the quake zone experienced no more than moderate damage and most were operational within a few days. Several hospitals, including the newly completed Olive View Hospital, and several business buildings, as well as many homes suffered significant structural damage. There was over $900 million in damages, 65 people killed and 1000 persons injured, even though that part of the San Fernando Valley was marginally populated at that time.

On May 2, 1983 at 4:42 p.m. when Coalinga was shocked by a 6/5 magnitude quake, followed almost momentarily by a 5.0 aftershock, this writer was attending a meeting 60 miles away in Visalia. Those of us there had no doubt that something serious had happened somewhere. Later that evening, when the Fresno television station broadcast pictures from Coalinga we saw what looked like a war zone. Many of you may have contributed money to the Coalinga Teachers Association as we did, to help faculty and students who were victims of that disaster.

The Coalinga schools included three elementary schools, a junior high and a senior high school in close proximity. They were constructed in 1939, 1940, 1952, and 1955 long after the Field Act. The buildings came through with no major structural damage, and were reopened within about two weeks. This is not to say that there were not some significant lessons to be learned from the damage that did occur.

There was a direct correlation between window glass breakage and the size of the pane. The larger the glass pane the more apt it was to shatter. Windows that measured 8 x 10' on the north and south walls of the junior high library imploded showering the room with shards of broken glass. Floors and furniture were heavily gouged by these shards. (None of these windows were of tempered glass. In addition to broken glass from windows was the glass from the fluorescent tubes and other lighting fixtures which rained down in the buildings.

Water pipes and other utilities entering through concrete walls were severed below

ground level. Most of the buildings had basements which flooded from broken water pipes. Electrical systems located in these basements were knocked out, and since ventilation, dependent on electrical fans, was inoperable toxic fumes from spilled chemicals in the high school chemistry lab filled the building.

In all of the rooms in the buildings, items not securely fastened down toppled over or became flying projectiles. Books, files, typewriters movie screens all became instruments of injury or death. Bob Vert, who was Superintendent of Coalinga schools recommended that the state mandate grater protection for the children by requiring schools to eliminate potential non-structural hazards.

WHAT MAY HAPPEN IN SCHOOLS

In addition to the structural and non-structural hazard potential in schools which face our students and staff, as exposed by the Coalinga disaster, there are other perils for which we must be prepared. Consideration must be given to the support of life following immediately, and perhaps for several days after a major disaster of large geographic proportion.

While most parts of the world are threatened by the effects of a major earthquake, volcanic eruptions, floods and storms, we in California are most aware of earthquake potential. There is a very real danger of an 8.3 magnitude quake from the San Andreas fault line and an even greater danger of an earthquake of major proportion and magnitude along the heavily populated areas near the Newport-Inglewood fault line. Still, few of us have done more to prepare for the aftermath of such disaster potential than merely to be aware of it.

When one of these quakes, which have been predicted, occurs, schools may be the only buildings standing which may be used to shelter, not only students, and staff, but many members of each school community area. The Offices of Emergency Services have continuously recommended storage of water, first aid supplies, food and other emergency supplies and equipment to sustain life from three to five days. They have (conservatively I believe) projected that outside aid and supplies will not be a available for that period after a major earthquake. The Chief of the Los Angeles Fire Department has said "in the event of such a disaster it will be imperative to have stored emergency drinking water" and "that first aid will be the only aid." There are just no enough emergency services and personnel to be at each scene, and changes are they would not have enough undamaged vehicles or cleared streets to transport for several days."

Schools can not afford to wait for the state to mandate the storage of emergency supplies, and for the state to fund such legislation. The risk is too real, and too great, to ignore the responsibility in the hope that some outside source will be there to take over when it happens. Like the proverbial ostrich that buries its head in the sand at sensing danger, we will remain vulnerable unless we take more appropriate action to prepare in advance for the danger.

In Pursuit of Earthquake Preparedness for our Schools

Robert R. Douglass
Chief of Emergency Management, Retired
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The State Department of Education task force has brought together an impressive group of people with a wide range of expertise and experience to deal with the subject of earthquake preparedness for our schools. Collectively, we are all extremely hopeful that our time and efforts will serve to enhance the safety of the students and staff at our schools, and provide the community with critical support and facilities during times of earthquake-caused emergencies. Interaction with the other members of the task force has been most beneficial as we expressed our views based on our own individual backgrounds, experiences, and findings. It was gratifying to associate with such a dedicated group of individuals and to have the opportunity to expand my knowledge concerning the earthquake preparedness efforts for our schools.

Assembly Bill 3730 listed some very specific report requirements. It also stated that the report should not necessarily be limited to these items. The Department of Education has strongly urged task force members to submit issue papers to accompany this report. Below are a number of issues which I feel are especially important. It is hoped that further discussion of these aspects of earthquake preparedness may be of value, or could trigger other worthwhile ideas.

A QUICK PERSPECTIVE

It is clear that many schools and school districts are putting forth a great deal of effort in the development of earthquake preparedness systems. Unfortunately this is not universally the case, and many of us have encountered specific situations regarding school preparedness which concern us.

For example, I have examined the preparedness plans of several schools in Southern California. One instance which is particularly disturbing is a situation concerning a high school in a very small school district. The district has a basic district office emergency preparedness plan which is supplemented by a three page earthquake drill and evacuation procedure handout for use at the high school. As far as I have been able to determine this document, supplemented with the addition of the utilities shut-off locations drawings, makes up the entire written site-specific plans for the high school. Review of the evacuation routes and assembly areas indicates that very little consideration was given to the potential hazards along these evacuation routes and assembly areas. For example, one assembly area is located within a strip approximately 52 feet wide, between a two-story brick building and a very busy

boulevard. (It is stated in the instructions that students should be a minimum of 50 feet from any structure). Not only is the building structure a hazard, but traffic on the street poses a major hazard as students sit along the curb as well as stand in the street during evacuation procedures. One good after shock could result in needless deaths or injuries.

There are examples of hazards within the classrooms as well. For example, during the Los Angeles Whittier October 1987 earthquake, a bank of pendent mounted fluorescent lights fell. Fortunately the classroom was unoccupied. There are several buildings and a number of classrooms where this very obvious nonstructural hazard still exists. The district is aware of the situation but to my knowledge has not taken any corrective actions. There are many other correctable, nonstructural hazards which exist throughout the district. However no mitigation program has been initiated. I am afraid that this may not be an extreme or isolated case. What is particularly disconcerting is that this district continues to tell the community they have a very comprehensive emergency plan. I hope that some of the other task force members will relate some of their findings. Unacceptable situations do exist, but unfortunately there is no good method to evaluate how extensive they are.

KATZ BILL COMPLIANCE

The Katz Bill contains both requirements of a general nature, as well as those dealing with specific items. It is important to note that this state mandated law does not provide for program funding. This leaves the execution of the program vulnerable to the minimum requirement and minimum expenditure approach. Listed below is an attempt to identify a minimum compliance effort under the Katz Bill.

1. Each school site has a copy of the district's emergency procedures plan and each school site has building evacuation drawings, designated assembly areas and drawings showing utilities shut-off locations.

2. Drop drills are held once a quarter in elementary schools and once a semester in secondary schools.

3. The basic self protective measures to be taken before, during and after an earthquake are prescribed in the district emergency procedures plan. Instruction in these procedures are given to the staff and students on a regular basis.

4. Students and staff are made aware of, and properly trained to use the earthquake procedures system through classroom instruction, staff meetings, in-service training, scheduled drills and awareness programs.

5. The District has established a policy to grant the use of the school buildings, grounds, and equipment to public agencies for mass care and welfare shelters and is prepared to cooperate with other agencies such as the Red Cross as may be deemed necessary to meet the needs of the community.

Showing how extensive the earthquake emergency procedures system should be was never the intent of the Katz Bill. For example the need to be self-sufficient for several days was not mentioned. The stated purpose of the Katz Bill is: "In order to minimize loss of life and disruption, it is necessary for all public or private elementary schools and high schools to develop school disaster plans and specifically an earthquake emergency procedure system so that students and staff will act instinctively and correctly when an earthquake disaster strikes." A tremendous amount of planning criteria has been developed for earthquake preparedness planning in schools since the Katz Bill was introduced in 1984. One should now compare the minimum approach as listed above with the components and recommendations as developed for the AB 3730 report. Specific criteria needs to be established for school disaster preparedness. Furthermore we should take a good hard look at the ramifications of having the districts make their own determinations as to the extent of Katz Bill requirements, and their own self-evaluation of compliance with the law.

ACCOUNTABILITY

An accepted overall Department of Education emergency earthquake procedures program, which includes sufficient direction and guidance, from the State should be established on a state-wide basis. This will hold schools and school districts accountable to the local citizens for the establishment of a credible emergency earthquake procedure system. These procedure systems must be developed at the local level, with the cooperation of all parties concerned. There are many ways to approach the accountability process, but finding the most efficient and practical solution may require extensive evaluation. When or if the time comes, the following are mentioned for consideration:

1. Have an appropriate county or state agency review the preplanning assumptions and evaluation materials and the operations plans on a scheduled basis. Any program of this type must be carefully devised and adequately funded. The State did initiate a submittal by local agencies and review Procedure for dam failure evacuation plans after the 1971 San Fernando earthquake, though there is some doubt about whether it is being maintained or meets its original program intent. There is a nonfunded earthquake preparedness program going on in Ventura County between the county emergency services and all the school districts which may serve as an example.

2. Develop a written, uniform school emergency earthquake procedure system evaluation manual similar to the Federal Emergency Management Agency "Guide for the Review of State and Local Emergency Operations Plans" which is used in conjunction with the Governor's Office of Emergency Services "Multihazard Functional Planning Guide".

3. With the passage of proposition 98, an accountability report card is required by all schools. Among the many items to be addressed by the Department of Education in the California Model School Accountability Report Card (SARC) an item called "safety" has been included. Perhaps this item could be defined to specify items for the school's earthquake preparedness posture and quality of their emergency procedure system. (However, if this approach were to be used, a separate reporting system is recommended and would be more effective).

4. I propose that a disclosure-type document be issued by the district for each school as public information, outlining their earthquake emergency preparedness program. Citizens have the right to know if the district and schools have adequate plans, what hazards exist at the facilities and what measures and procedures are being taken to correct the deficiencies and problems. In many situations, the State is required to inform the public of existing known hazards. For instance, a sign required to be posted on a private business facility by the State Health and Safety reads "Warning. Detectable amounts of chemicals known to the State of California to cause cancers, birth defects, or other reproductive harm may be found in and around this facility". For schools we might include disclosure items such as inadequate emergency plans, uncorrected nonstructural hazards, no emergency food or water supply, adjacent major fire and chemical hazards etc,.

My main concern is accountability for the safety and welfare of our students, teachers and staff. It is not clear where the responsibility lies. This apparent obfuscation of responsibility, be it intentional or otherwise, serves to prevent the public from playing an active role in the safety preparedness of our schools.

FUNDING

We have no realistic estimate of what the cost might be to institute a credible earthquake preparedness program based on the earthquake scenario planning guides and materials provided by agencies of the State of California and the Federal Emergency Management Agency. We do know it would be a significant amount money. From my perspective the
prospects of any new substantial funding for such a program appears very unlikely. Nevertheless the cry after the catastrophic earthquake will be "We knew how to

minimize the deaths, injuries and suffering so why didn't we?" My praises go to those districts and private institutions which are finding ways to create their various earthquake emergency preparedness programs and hope they will continue to develop and improve them to the fullest extent possible. Unfortunately not all schools are able to develop realistic programs.

Like many other programs in our schools there are great disparities in the present system and I believe this will continue. However, if we expect to achieve some minimum safety level, we will need funding solutions be it the use of existing funds, new State monies or other innovative sources such as business or private citizen campaigns. The following are mentioned for consideration:

1. My first recommendation is to encourage support for the ideas in my colleague's monograph entitled "A Proposal for an Effective State Contribution to Earthquake Safety for Our Children". This would require additional state revenues and a portion of the current education funds.

2. Earmarking some or all of lottery monies for earthquake preparedness for our schools. It could be a one-time allocation to get the program started or it could be carried out over a period of time. The voters who passed the lottery bill had a firm belief that the funds would be used for extended enhancement of educational programs, but for the most part this has not occurred. The funds are used for general operations. The use of the lottery monies would be very unpopular with most administrators, but safety for our children could be very popular with the voters.

3. Make nonstructural hazard mitigation items, such as hazardous light fixtures and hung ceilings, top priority on the school district's deferred maintenance item list.

Appendix D: Additional Reviewers and Supporters

C.R. Bret Breton, Safety Coordinator
Ventura County Office of Education

Agnes Chan, Member
State Board of Education

Elizabeth Cogswell
Consultant

Deane L. Ellickson
Rancho Valley Services, Inc

Ed Hensley, Public Information
Seismic Safety Commission

Assemblymember Roybal-Allard
Attention: Sal Villasenor

Appendix E: AB 3730

Assembly Bill No. 3730

CHAPTER 1352

An act relating to earthquake safety.

[Approved by Governor September 25, 1988. Filed with Secretary of State September 26, 1988.]

LEGISLATIVE COUNSEL'S DIGEST

AB 3730, Roybal-Allard. Earthquake safety: school procedures.

Existing law requires the governing board of each private school and public school district and each county superintendent of schools to establish an earthquake emergency procedure system, to include protective measures to be taken before, during, and following an earthquake.

This bill would require the State Department of Education to prepare a report, for submission to the Legislature on or before June 30, 1989, containing recommendations for compliance with the methods of earthquake preparedness mandated by Chapter 1659 of the Statutes of 1984, as specified.

The people of the State of California do enact as follows:

SECTION 1. (a) The State Department of Education shall prepare a report containing recommendations for compliance with the methods for earthquake preparedness mandated by Chapter 1659 of the Statutes of 1984. The report shall be submitted to the Legislature on or before June 30, 1989.

(b) The report shall include, but not necessarily be limited to, findings regarding all of the following:

(1) A determination of the components of a model earthquake emergency procedure system as described in Chapter 1659 of the Statutes of 1984, including, but not limited to, the elements of a school building disaster plan.

(2) The role and operation of public school sites as community shelter locations and disaster centers in the event of a major earthquake or other similar disaster.

(3) An identification of a procedure for earthquake damage assessment prior to the school site being used as a community shelter or disaster center.

(4) An identification of the equipment and supplies that would be needed for a school site when used as a community shelter or disaster center after a 7.0 magnitude or greater earthquake.

(c) In developing the report, the department shall consult with representatives from the Office of Emergency Services, the Southern California Earthquake Preparedness Project, the Bay Area Regional Earthquake Preparedness Project, the American Red Cross, and school districts, and parents, teachers, and pupils.

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Appendix F: Education Code 35295 et seq. (Katz)

ARTICLE 10.5. EARTHQUAKE EMERGENCY PROCEDURES

Section
35295. Legislative findings and declarations.
35296. Establishment of systems.
35297. Components of system.

Article 10.5 was added by Stats.1984, c. 1659, § 1.

§ 35295. Legislative findings and declarations

The Legislature finds and declares the following:

(a) Because of the generally acknowledged fact that California will experience moderate to severe earthquakes in the foreseeable future, increased efforts to reduce earthquake hazards should be encouraged and supported.

(b) In order to minimize loss of life and disruption, it is necessary for all public or private elementary schools and high schools to develop school disaster plans and specifically an earthquake emergency procedure system so that students and staff will act instinctively and correctly when an earthquake disaster strikes.

(c) It is therefore the intent of the Legislature in enacting this article to authorize the establishment of earthquake emergency procedure systems in kindergarten and grades 1 through 12 in all the public or private schools in California.

(Added by Stats.1984, c. 1659, § 1.)

§ 35296. Establishment of systems

The governing board of each private school and school district and the county superintendent of schools of each county shall establish an earthquake emergency procedure system in every public or private school building under its jurisdiction having an occupant capacity of 50 or more students or more than one classroom. Governing boards and county superintendents may work with the Office of Emergency Services and the Seismic Safety Commission to develop and establish the earthquake emergency procedure systems.

(Added by Stats.1984, c. 1659, § 1.)

§ 35297. Components of system

The earthquake emergency procedure system shall include, but not be limited to, all of the following:

(a) A school building disaster plan, ready for implementation at any time, for maintaining the safety and care of students and staffs.

(b) A drop procedure. As used in this article, "drop procedure" means an activity whereby each student and staff member takes cover under a table or desk, dropping to his or her knees, with the head protected by the arms, and the back to the windows. A drop procedure practice shall be held at least once each school quarter in elementary schools and at least once a semester in secondary schools.

(c) Protective measures to be taken before, during, and following an earthquake.

(d) A program to ensure that the students and that both the certificated and classified staff are aware of, and properly trained in, the earthquake emergency procedure system.

(Added by Stats.1984, c. 1659, § 1. Amended by Stats.1988, c. 448, § 1.)

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